



Experiences with Big Data Programs

An Industry Perspective

EASA FDM Conference

12-13 June 2017

Captain Neil Raaz
Senior Manager, Flight Safety
Assurance & Compliance
American Airlines

Terry McVenes
Director, Aviation System Safety and
Regulatory Affairs
Boeing Commercial Airplanes

Content

- The Operator's Perspective
 - Expectations
 - Benefits
 - Program Challenges
- The Manufacturer's Perspective
 - Aviation Safety Trends/Strategy
 - Role in Data Sharing
 - Benefits
 - Program Challenges
- Setting the Stage for the Future



The Operator's Perspective

EASA FDM Conference

June 12-13, 2017

Captain Neil Raaz
Senior Manager, Flight Safety
Assurance & Compliance

Expectations from the Operator

Data Protection

- Binding nondisclosure protections from the release of sensitive data
 - FOIA (Freedom of Information Act)
 - Subpoena
- Anonymity
 - No data supplier should know another's specific performance
 - Aggregate risk analysis – Rule of two
 - Airline Benchmarking – Rule of three

Identify the risk without identifying the operator...

Expectations from the Operator

Data Usage

- Strictly limited for safety enhancement that is beneficial to the airline and the industry
 - Never to be used for competitive reasons
- Shared benefits for all stakeholders
 - Large and small
 - Labor and management
 - Operator and manufacturer

Trust...in both the players and the process

Benefits to the Operator

1. Helps start a dialogue and create a collaborative relationship with the regulator and our peers
2. Allows the aviation safety community to speak with one voice
3. Fosters industry-wide technological advances in risk identification and mitigation
4. Leverages industry-wide safety data to help identify emerging threats and fill gaps in your own monitoring program
5. Allows for deeper analysis of extremely rare events...creates a “critical mass” of safety data
6. Codifies the global SMS for the entire industry



Leverages each stakeholder's data into collective knowledge for mutual benefit

Benefits

Event Benchmarking

American Airlines

Home Documents Members Help

ASAP Trends

FOQA Benchmarks

Executive Overview

Excessive Float

Rejected Takeoff

TAWS Alerts

TCAS RAs

Unstable Approach

Metadata

ASAP Data Loading

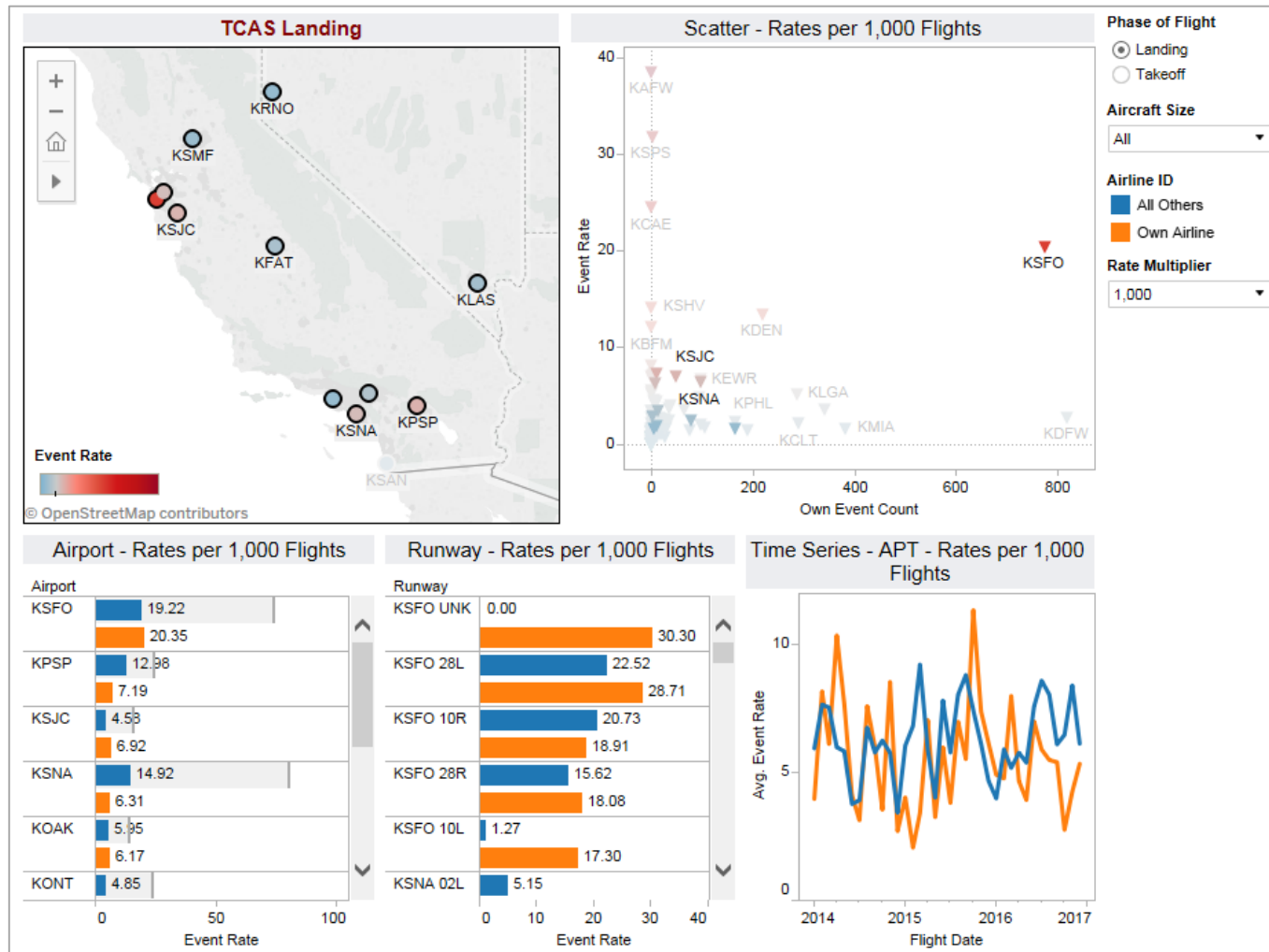
ASAP Data Mapping

FOQA Data Loading

FOQA Data Quality

Benefits

Event Benchmarking (Notional – Not for Distribution)



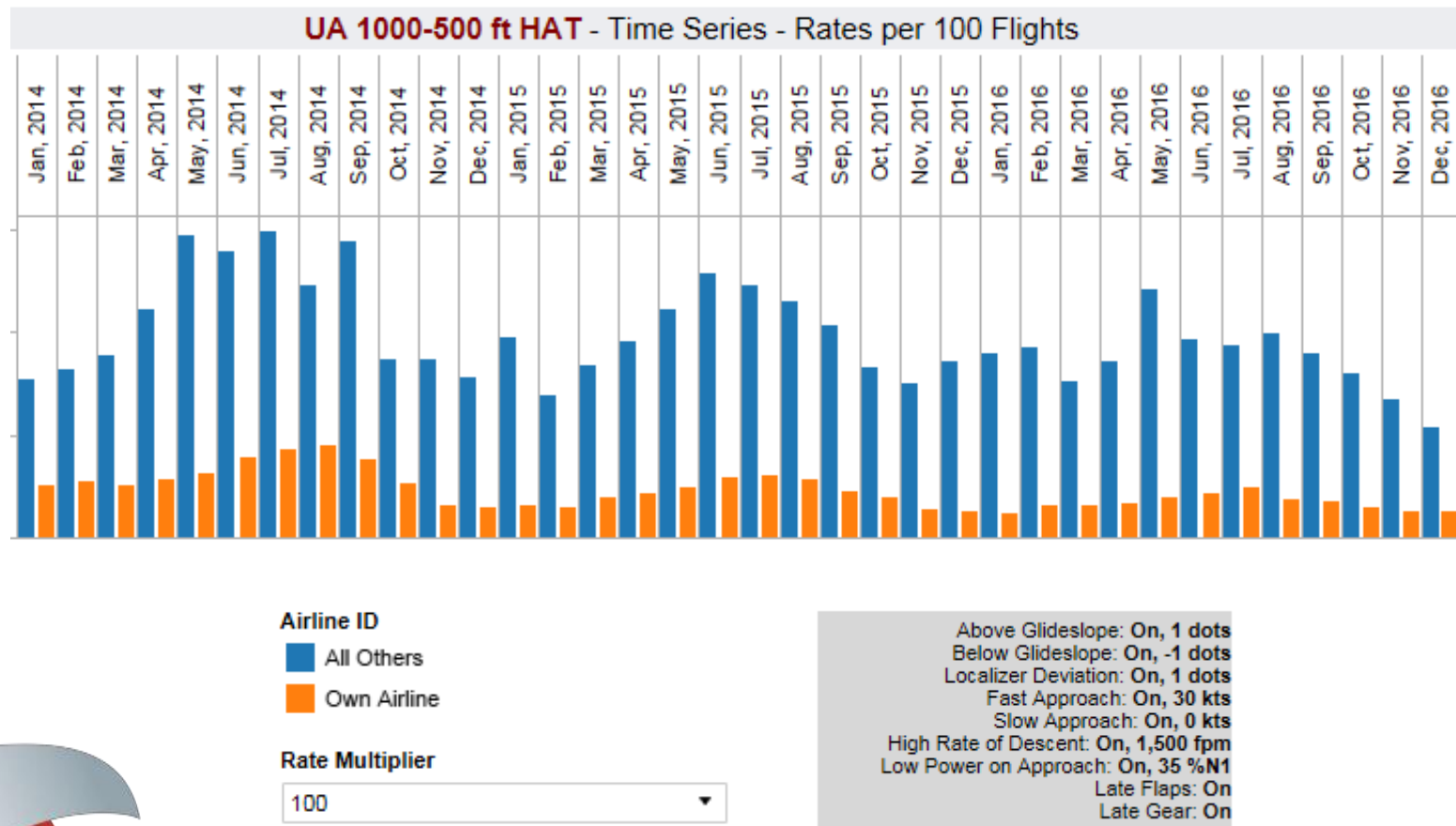
Benefits

Event Benchmarking (Notional – Not for Distribution)



Benefits

Event Benchmarking (Notional – Not for Distribution)



Program Challenges

1. Pace of progress

- Changes in stakeholders resources and participation levels
- Stakeholders aren't always 100% aligned
- Consensus based decisions take time...but are worth it

2. Governance

- Need to renegotiate labor agreements to allow participation...but this also presents opportunity

3. Data protection

- Consistent legal disclosure protections across multiple legal systems within the E.U.
- Paramount to the program's success

*Collectively champion positive change
within the industry*



The Manufacturer's Perspective

EASA FDM Conference

June 12-13, 2017

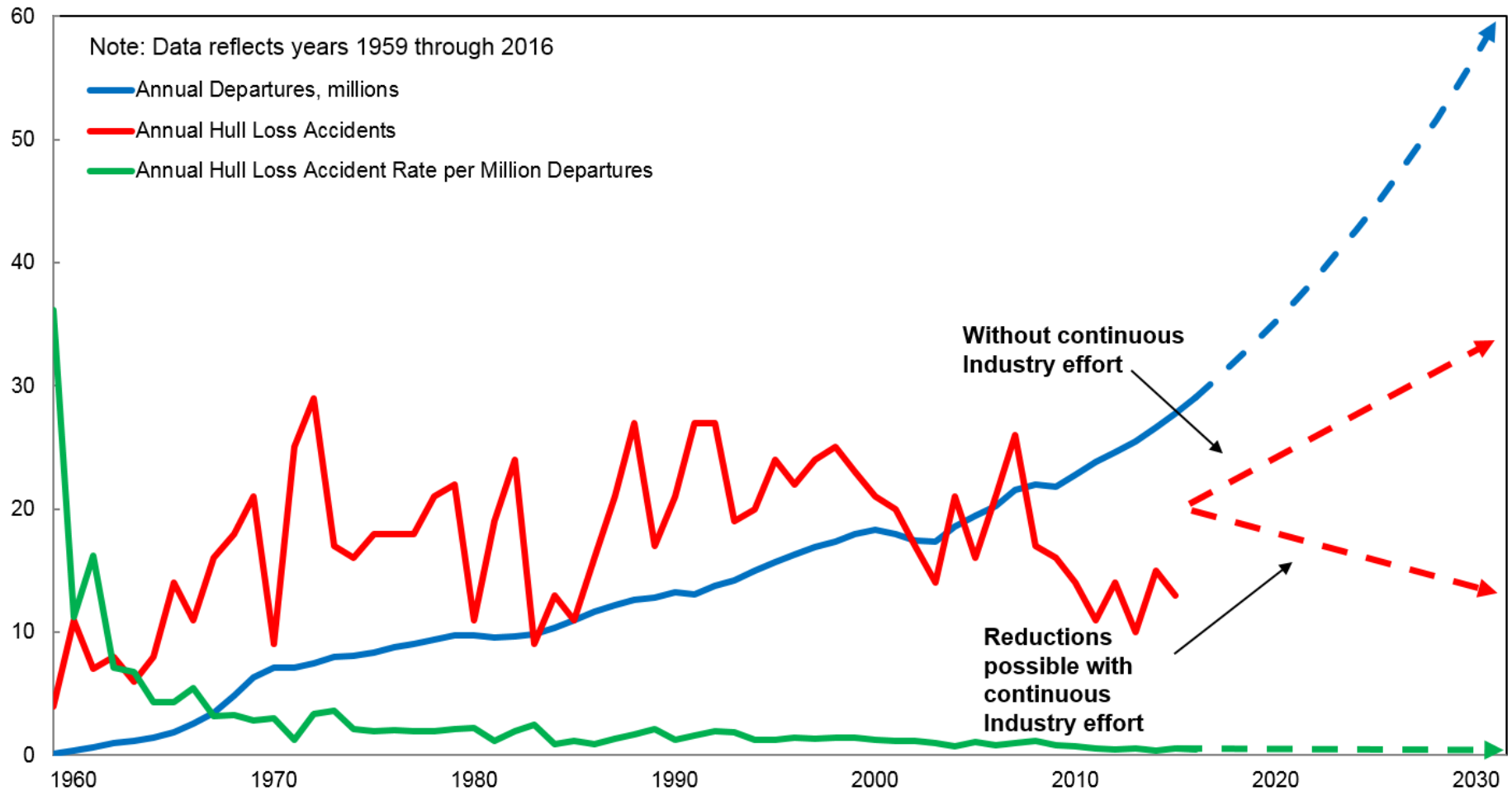
Terry McVenes

Director, Aviation System Safety and Regulatory Affairs
Boeing Commercial Airplanes



Boeing Safety Management System

Aviation Safety Trends



Boeing Strategy for Global Aviation Safety



Design > Build > Operation > Maintenance > Infrastructure > Regulation

Working together for a Safe and Efficient Global Air Transportation System today and in the future

Role of the Manufacturer

- **Participation in safety directed studies**
 - Aircraft State Awareness
 - Automation Confusion
 - Misconfiguration Study
 - Simulator Studies for “flaps retracted before gear” on takeoff
- **Provide detailed technical knowledge of our products**
 - Remove speculation
 - Eliminate unintended consequences from incomplete information



Benefits to all stakeholders in the aviation system

Experiences with Current Data Sharing Efforts (ASIAS)

- Industry efforts are required to enhance aviation safety
- Interaction between Commercial Aviation Safety Team and ASIAS
- OEM input is essential to success
 - Metrics
 - Development of risk mitigation
 - Governance



20+ years of continuous support of industry safety efforts

Benefits to the Manufacturer

- Enhanced understanding of the aviation system and our products
- Changes and improved product design, training and procedural recommendations
- Enables enhanced support to our customers
- Enables addressing specific non-systemic issue



Enhancing Safety and Efficiency Across the Aviation System

Program Challenges

- Unique requests for data/information/support
- Data is not owned by the manufacturer
- Data can not be provided generically
- Data can not be provided easily due to internal software/programs/formats etc.
- We have lawyers too!



Differing Challenges from our Other Safety Partners

Going Forward

- Creating a national safety culture
- Defining the roadmap for international sharing and collaboration
 - Building technology and processes
 - Building trust through developing an ongoing safety data sharing efforts
- Lead the industry toward a worldwide aviation system
 - systematically mitigates risk
 - continually reduces the likelihood of accidents.





American Airlines



Thank You